



Emerging infectious diseases



Problem statement

Emerging infectious diseases (EIDs) include infections that are new, have increasing incidence or are spreading to new geographical areas. Examples of these diseases include COVID-19, Ebola, Middle East Respiratory Syndrome coronavirus (MERS-CoV) and highly pathogenic avian influenza among others. Three-quarters of such infections are zoonotic, and their epidemics often lead to far-reaching human and animal health burden as well as socio-economic impacts. For example, the recent COVID-19 pandemic has demonstrated how an EID event can threaten peoples' lives and livelihoods worldwide. Their occurrence patterns are difficult to predict given the inadequate knowledge of their drivers. Africa is now becoming one of the vulnerable regions for EIDs given its high and growing human population which now stands at one billion. By 2100, it is projected that this population will grow to around four billion people. This population boom puts more pressure on ecosystems as the demand for food and income intensifies. The rising risk of emergence and spread of zoonoses in the continent has significant consequences for the rest of the world.

How we are addressing the problem

This "species jump" by pathogens is not new; it has occurred throughout pre- and recorded history. However, in the last half of the 21st century, these events have occurred in larger epidemics with greater impacts. Under OHRECA's EID theme:

- Spatial analyses will be conducted to identify drivers and hotspots for EID events in Africa using available records on EID outbreaks and geographical datasets. This will be followed by high-resolution spatial analyses within countries in high-risk areas to develop risk maps.
- Outbreak investigations for selected EIDs, supported by state-of-the-art diagnostic tools, will also be conducted in partnership with One Health units in affected countries/EID to collect data for analysing their transmission patterns.
- Evidence generated from various activities conducted will be used for stakeholder training, development of EID contingency plans and surveillance strategies.

- Field-based epidemiological studies and capacity strengthening will be conducted in four countries.

Role of One Health

Emerging infectious diseases should be managed using One Health approaches because when used efficiently, they enable early detection and response to their outbreaks. This can be achieved, for instance, when surveillance systems detect EID events in animal populations before they spill over to humans. In a few cases, One Health approaches can also spot tell-tale

ecological changes that precede EID emergence. More importantly, coordinated interventions at human, animal and environment levels have better chances of success than disciplinary approaches.

Expected outcomes

The theme aims to develop and disseminate tools for early detection and response to EIDs. It will also generate new knowledge on patterns and drivers of EIDs in sub-Saharan Africa.

One Health Centre in Africa

The International Livestock Research Institute (ILRI) has established a One Health Research, Education and Outreach Centre in Africa (OHRECA) with support from the German Federal Ministry for Economic Cooperation and Development (BMZ). The centre's primary goal will be to enhance human, animal and ecosystem health by developing capacity in One Health, supporting One Health network initiatives, and developing pathways from evidence to policy and practice.

The centre's research and development activities are implemented under four themes, each having its own defined technical (scientific), capacity and policy outputs and outcomes. The four themes are:

- preventing emerging infectious diseases;
- controlling neglected zoonoses;
- ensuring safe food; and
- reducing antimicrobial resistance

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The International Livestock Research Institute (ILRI) is a non-profit institution helping people in low- and middle-income countries to improve their lives, livelihoods and lands through the animals that remain the backbone of small-scale agriculture and enterprise across the developing world. ILRI belongs to CGIAR, a global research for development partnership working for a food-secure future. ILRI's funders through the CGIAR Trust Fund, and its many partners, make ILRI's work possible and its mission a reality. Australian animal scientist and Nobel Laureate Peter Doherty serves as ILRI's patron.

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